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A UTILITY THEORY OF OLD AGE.

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HERZBERG'S JOB SATISFACTION MODEL SERVES AS THE BASIS FOR AN ANALYSIS OF OLD AGE. THE PATTERN VARIES AMONG INDIVIDUALS, BUT THE CAPACITY FOR ORGANIZED BEHAVIOR RATHER THAN RANDOM STRESS REDUCTION SUPPLIES EACH INDIVIDUAL WITH A TASK. THE HYPOTHESIS IS THAT IF THE OLDER INDIVIDUAL REALIZES UTILITY IN HIS YEARS BEYOND 70, HE WILL RETAIN COMPETENCE AND LIVE LONGER. A TASK ORIENTATION WITH SYSTEMATIC REINFORCEMENT RELEVANCE AND CONTINUITY MAY BE NECESSARY FOR OLD AGE. A NUMBER OF SUGGESTIONS FOR FUTURE RESEARCH ON THE CONDITIONS WHICH INFLUENCE THE OLDER PERSON'S MOTIVATIONAL ENERGY AND THE POSSIBILITY OF PROGRAMMED OBJECTIVES FOR THE OLDER PERSON ARE DISCUSSED. THIS DOCUMENT MAY BE FOUND IN N. W. COPPINGER'S, THE PSYCHOLOGICAL ASPECTS OF AGING, VA CENTER, HAMPTON, VIRGINIA, MAY, 1966, PP. 113-138. (NS)

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A Utility Theory of Old Age*

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February 1966

*Research Report 66-1: A previous report considered Motivational Orientation in Old Age. The present report discusses a conceptual model. Both reports have been prepared for the VA Study Group on Psychological Aspects of Aging. The Study Group meets in New Orleans, March, 1966.

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A previous report considered Motivational Orientation in Old Age, and listed several topics for more detailed development. The first step recommended was a conceptual model to guide research. The following comments on such a model are tentative, and open to a wide variety of criticisms. It is nevertheless intriguing to consider: a utility theory of old age.

We might ask two questions: (1) who needs the old person? and (2) why does the individual need old age?

These questions refer to the "meaningful use of time" (13). Herzberg's (12) term "task" can be equated with the meaningful use of time. The utility of time represents a crucial consideration in research on old age. The later years of life supply a bonus of time. Does society need this time? and does the individual need it?

As a culture develops, the life span increases. It is easy to assume that technology prolongs life. Society must then carry an increasing burden of useless time, an ever growing number of individuals over 70. For humanitarian reasons, the useless old person must be given something to do. He has no need for extra years; he needs a use for those years. Society must provide busy-work, and then find uses for this useless activity. Society must learn to need a supply of time that it never really wanted.

A competing hypothesis deserves consideration. As a culture progresses from food snatching to hand agriculture, to predatory war, to mass labor, and to automation, the patterns of utility change. Skills replace physical endurance: man then lives to be 50. Technology replaces muscle and simple skills: man lives to be 70. If the utility of wisdom should ever receive social sanction, man might live to be 90 or 120. Even now society uses prime ministers who average over 70, and popes who average over 80 (3). Cottrell's (13) suggestions raise interesting possibilities: "Increased longevity derives from our increased productivity, but it also contributes to it . . . . Men today put in a decade more of work . . . than did their grandfathers. This in spite of the fact that they enter the working force later than their forebears." Society uses the younger years less -- men enter the labor force later. And society uses older ages more -- men work 10 years of old age time that was once senility. Is it logical to suppose that this shift in utility patterns has been forced upon society by an increased life span? The obverse is more plausible. A technological society has little use for young muscles, and more use for old men. (For an analogous thesis, cf. "Who needs the negro?", 15). The proposition is at least worth considering: utility determines the life span. Technological advances in nutrition and medical care represent secondary mechanisms. The basic cause and effect relationship is between utility and old age. If the culture needs men of 120, they will begin to appear on the scene. (They will also be remarkably sharp and alert: there was a time when every coach knew that 6 foot 7 inch basketball players were too awkward, and 395 pound guards too fat, for effective competition. Currently, every physician knows that centenarians are too senile for any meaningful activity.)

This discussion will consider chiefly the psychological question: why does the individual need old age? and not the socio-cultural question: who needs the old person? The two questions, however, represent aspects of a single problem: does utility determine longevity -- and senility? Who needs the extra time provided by the years beyond 70?

Task orientation: Herzberg et al (12) set forth a model for research on job satisfaction. The initial data tend to limit terms and discussion to professional activities, to paid jobs, and to individuals of higher socio-economic status. The model, however, has applicability to a wide variety of behavioral problems.

Certain difficulties arise when the model is applied to areas other than job satisfaction. Herzberg and Hamlin (10, 11) have discussed task orientation and mental health. The present comments consider old age, and equate the "meaningful use of time" in old age with Herzberg's "task." This section sketches the task orientation model. The next section considers specific problems of definition.

Herzberg emphasizes dichotomies: task versus non-task, satisfaction versus dissatisfaction, and approach versus avoidance. First, he suggests two sets of factors. He uses the term Motivator to refer to factors that are inherent in a task. He uses the term Hygiene to refer to factors associated with conditions surrounding the task. The task factors include: achievement, recognition, responsibility, and goal-directed effort. In a job setting, the non-task factors include: supervision, company policy, peer relationships, and working conditions.

Second, Herzberg postulates another dichotomy. Satisfaction and dissatisfaction represent two distinct continua. Tradition regards them as the opposite

ends of a single continuum. The presence of task factors leads to satisfaction, but their absence does not cause dissatisfaction. Conversely, non-task factors if unfavorable cause dissatisfaction; but, if favorable, they have no effect on positive satisfaction. Thus, the relation to satisfaction defines the two distinct sets of factors: (1) factors that reflect a primary focus on a meaningful activity, and that lead to satisfaction; and (2) factors that reflect a primary concern with surrounding conditions, and that have their effect only in reducing dissatisfaction.

Third, a dichotomy of motivational orientations emerges: approach and avoidance. The motivational orientation of any individual encompasses both task and non-task interests. Also, situational factors influence this balance of interests. For example, after age 70, situational factors become task-irrelevant; without a social role, the old person finds neither task factors nor even task-context factors. No person is exclusively task oriented; and orientation changes with situations. In general, however, the mentally healthy individual characteristically seeks satisfaction in task behaviors (10, 11). Mental illness is associated with seeking the reduction of dissatisfaction from surrounding conditions. It is these patterns of satisfaction-seeking that define motivational orientation.

For the most part, discussions emphasize the first two dichotomies: task factors and satisfaction, versus non-task factors and dissatisfaction. Less formal consideration has been given to cause and effect mechanisms: how does task orientation lead to satisfaction? Herzberg and Hamlin (10, 11) relate task orientation to self-actualization and to approach; and non-task orientation to atrophy and to avoidance. Their more detailed comments on the third dichotomy (approach-avoidance) are too amorphous to paraphrase, but influence the suggestions in the next paragraph.

In general, a task orientation leads to "growth," defined as: (1) novel, more complex capacities; (2) a parallel increase in sensitivity to novel, more complex incentives; and (3) an habitual pattern of approach behaviors, not clearly different from an increased sensitivity to task-inherent incentives. A non-task focus leads to: (1) a devaluation of new capacities, in favor of an interest in "unearned income;" (2) little change toward novel, more complex incentives, but rather an insatiable need for increase in old incentives that continually lose in effectiveness; and (3) an habitual pattern of avoiding difficulties.

Several hypotheses have some interest: (1) the relation of novelty, in skills and in incentives, to satisfaction; (2) the relation of complexity, in skills and in incentives, to satisfaction; and (3) the relation of approach and avoidance to satisfaction. It is doubtful that approach and avoidance in this context parallel these two terms as usually defined. That is, the task oriented person has a clear priority list of outcomes, or goals. He approaches these goals, but in doing so may engage in both approach and avoidance behaviors as more narrowly defined. The non-task person is sensitized primarily to avoiding difficulties, or reducing stress (reminiscent of drive reduction).

Major attention might be given to reinforcement schedules, and specifically to the contingency of reinforcements. The task oriented person may have an efficient, built-in reinforcement schedule (goals); whereas no effective, long-range pattern of reinforcement operates for the non-task person, who goes through life more or less like Aesop's man, with his son and his donkey, crossing the bridge. Contingency may be more important than schedule. Or, graduated novelty and complexity of reinforcers -- and of skills -- may be more important than either.

Definitions: The task model employs a number of tentative definitions. Such terms as motivation, task, and satisfaction have a variety of legitimate meanings. These notes do not attempt to solve all the definitional problems, but comment on a few recurrent difficulties.

As used here, motivation refers to energy utilization. Drive reduction and the amount of available energy require comment. Botwinick (3) considers drive and motivation separately, and points up neatly the dichotomy of task and non-task incentives: "the concept underlying drive was that of control being exerted on the individual, while the study on motivation had as its underlying concept that control is exerted by the individual." In effect, the task oriented person directs his energies; whereas the non-task person allows his energies to be directed by surrounding conditions. Hull's drive reduction offers an efficient model only for non-task incentives. The non-task person responds in terms of avoiding stress; that is, in terms of drive reduction. The location of drives inside the organism (hunger as stomach contractions) does not remove them from "surrounding" conditions. Surrounding means task-surrounding, not external environment. The validity of Hull's model need not be considered. It is simply inefficient for present purposes. In a loose sense, drive reduction plays a major role in early infant behavior shaping. In old age, energy utilization, or task, plays the major role.

Drive strength needs special consideration in old age. Available energy declines. The efficiency of energy utilization increases. Direction rather than intensity of behavior defines motivational strength. Actually, at any age, the individual with high sustained motivation expends less energy for a given outcome. Research on aging should lead to more appropriate measures of motivational strength, emphasizing the efficiency of energy brought to bear on a given

task outcome. The random expenditure of energy, the "letting off steam" of the young child, reflects the absence of strong channeled motivations.

The two patterns of satisfaction-seeking define motivational orientation. One focus is on task factors, the other on non-task factors. A recurrent question refers to the relation between task orientation and Achievement, as defined by Murray and McClelland. The need for achievement has been regarded as one of a potentially infinite list of needs, comparable to McDougall's earlier lists of instincts. The model does not parallel Herzberg's sharp dichotomy of task and non-task. With reservations, the task model comes closer to the New Look in motivational theory: behavior-primary incentives versus drive reduction. The task oriented person acts chiefly on incentives inherent in his own goal-directed ("information processing") behaviors. The non-task person primarily avoids difficulties, reducing dissatisfactions associated with internal drives and with external stresses. Need reduction belongs with drive reduction.

The term task proves bothersome because of competing uses of the term. Other definitions equate task with drudgery or creativity, with economic production, with moral duty, with chores assigned by a boss or by an experimenter. Festinger, for example, tends to emphasize "insufficient rewards" (6), "dissonance" (5), and "severity of initiation" (2). No positive incentives merit consideration. His model follows the traditional pattern of explanation: organisms respond only in order to reduce stress. In other research, task factors encompass both task-intrinsic and task-context elements; including, for example, social desirability ("this project will help the starving Armenians") and ego-status ("intelligent people score high on this test"). As used here, task refers to the "meaningful use of time" -- or of energy. The organized energy system that is an organism imposes organization, and this organization

defines "meaningful." At a high level, the man-generated, arbitrary scientific model is a clear illustration of such meaning, which draws on data but imposes form. When energy is diverted from organized patterns to the reduction of random stresses from the unpredictable surrounding environment, disintegration, senility, and death should follow.

For different individuals, task patterns or "meanings" vary. That is, the task may be, on occasion, McClelland's competitive Protestantism, Maslow's creative Judaism, or Festinger's masochistic Existentialism. We need not accept Camus' suggestion that man is the only animal that seeks meaning in a meaningless world. But it is this capacity for organized concepts and directed behaviors that supplies each individual with a task. The older individual must perceive some utility for the years beyond 70. He can find meagre positive satisfaction in postponing disintegration, avoiding illness, and reducing stress.

The distinction between positive satisfaction and negative dissatisfaction plays a key role in Herzberg's model. Retrospective verbal reports tend to associate task factors with satisfaction (12). Task oriented individuals select task factors for anticipated future satisfaction (9). More complex individuals recognize satisfactions that emerge in the course of "creative" tasks. As Ghiselin puts it (7): "What is . . . verifiable in terms of the experience of every kind of worker, is the idea of inspiration as an emergence of new insight attended by more or less intense feelings of conviction and of esthetic delight." This special kind of "esthetic delight" resembles certain of Herzberg's illustrations of satisfaction. Other subjects in the job study report similar intense, lasting pleasure without the implication of unusual inspiration. That is, less creative individuals experience satisfaction that is highly "positive" in association with a pattern of task behaviors over time. In doing so, they

usually mention such factors as achievement, responsibility, successful effort, and recognition of worth. The element of inspired creativity is not essential. The reliance on verbal reports, as usual, has limitations. Satisfaction deriving from non-task factors may be reported. Herzberg (12, p. 118) suggests that such satisfaction may often be "little more than the absence of disliking, . . . little more than the absence of dissatisfaction." At this stage of progress, several conclusions seem justified in regard to verbal reports as a basis for defining positive satisfaction and negative dissatisfaction: (1) the initial job study and later evidence are sufficient to establish the dichotomy; (2) additional verbal report data will contribute little to a more precise definition of the positive satisfaction postulated by Herzberg; (3) selective-answer formats tend to guide the subject's verbal report and lead to somewhat different results than open-answer formats (12, 9); and (4) although verbal reports will continue to have value for a variety of purposes, more adequate operational definitions will come from analyses of incentives, of behavioral changes, of long-term outcomes, and the like.

Verbal reports relate satisfaction to task factors, to behavioral change, and to approach in the sense used here. The term approach is the last one that will be discussed in this section. In animal studies, approach means moving toward a reward, such as food. Avoidance means moving away from a punishment, such as shock. Arbitrary definition associates approach with satisfaction (reward), and avoidance with dissatisfaction (punishment). Rats do not confuse the issue by giving subjective reports. Task behaviors represent approach, and non-task behaviors avoidance. Some adaptations of the terms approach and avoidance are, however, necessary.

First, approach and avoidance ordinarily refer to short-range, simplified

responses. Task behaviors refer to long-range, complex sequences. Second, rewards are typically external stimuli. Task incentives are not so external and concrete; they are inherent in complex behaviors and in cognitive schemata. These two differences cover most of the modifications necessary in the terms approach and avoidance. However, the implications raise numerous questions. Task factors, such as responsibility, tend to increase rather than decrease aversive elements. Yet they are associated with approach, not avoidance. As Festinger (6) suggests, difficulties in a successful approach sequence may enhance rewards and satisfaction. The introduction of barriers along an approach path is familiar enough in animal research. Somewhat less familiar is the concept of motivational orientation. The task person adheres characteristically to a policy of approach; he is sensitized to rewarding task factors. The non-task person routinely avoids difficulties; he is sensitized to aversive stresses from surrounding conditions.

The locus-of-control concept, as expressed by Botwinick (3), has relevance. The task person exerts control, and "approaches" in this sense. The non-task person responds to controls exerted on him; including both rewards and punishments but always in terms of drive reduction, or basically "avoidance." Control, in this sense, should not be equated with a need for mastery, or a will to power, again drive reduction concepts. The task oriented approach implies the opposite of drive reduction, and refers to drive enhancement, to the directed expenditure of energy, or to the "meaningful use of time." This channeled utilization of energy correlates only incidentally with control as domination, with mastery as dictatorship, or with achievement as McClelland's "entrepreneurial success."

Two other reservations should be mentioned in regard to a narrow definition of approach. In the laboratory model of approach, the animal "moves toward,"

and he moves toward a "goal." The term task certainly implies some behavior that can be called movement, and some guiding end-product that can be called a goal. Certain receptive behaviors, however, should be included under "moving toward." In particular, the keen appreciation of new experiences and sensations, usually more prominent in childhood than later, needs to be accommodated under approach. The child may not be "doing anything," and may show little motor activity in seeking out such experiences. The high positive satisfaction postulated by Herzberg is often obvious. The "taking in" is by no means passive drive reduction, and should be regarded as "moving toward." Similarly, in aging research, statistics on retired laborers should be reevaluated. The manual worker, who retires after 40 years of physical routine, is likely to "sit around." The upper class individual who retires is well equipped with wholesome hobbies to occupy his time, like golf. It could be that the old laborer is more task oriented, and experiences more positive satisfaction, than the golfer. Bernard Baruch "sat around" on park benches. The "meaningful use of time" cannot be arbitrarily defined.

The individuals who most clearly illustrate receptive activities as "moving toward" are those whom we call creative. In this kaleidoscopic area, approach is richly described if not clearly understood. Here, for example, an approach sequence includes such stages as: the abandonment of approach as a part of approach; periods of receptive withdrawal; and arrival at outcomes that never served as direction markers for approach. As mentioned before, Herzberg's positive satisfaction may best be illustrated in creativity: such satisfaction is anticipated to some extent, but unexpected and unexpectedly intense when it emerges, and reflected most adequately in retrospective, free-response verbal reports; not in concurrent, multiple choice job satisfaction surveys. The

temptation to equate task orientation with creativity leads to misconceptions, but has value for some illustrative purposes. The essays on creativity point up the problem of goals. Can approach be defined as "moving toward" unless we add "moving toward a goal"? and if the goal must be specified, what do we mean by "goal"?

In a task experiment, the design specifies a goal. This goal is more or less tangible: certification to a group (2), or putting on a play (1). Anker and Walsh set a goal for their subjects: the production of a play. As experimenters, they have their own goal: behavioral changes representing "growth." McClelland (14) moves subjects directly toward cognitive restructuring: motive acquisition. McClelland also records related behavioral outcomes. These and other illustrations allow for several projected goals, for emergent goals, and for unanticipated outcomes. In his "meaningful use of time," the older individual may approach goals that he himself can label. In addition, society may need the old person. This need represents a goal and, in subtle ways, it programs the individual's approach behaviors. Basically, program and organization define "moving toward," and "meaningful" in the meaningful use of time. Society's programs are mediated through the programs of individual organized energy systems. In Darwinian evolution, organisms may approach perceived goals; the more significant outcomes -- evolutionary changes -- are not anticipated. These unexpected outcomes follow systematically from "lawful" programs. Similarly, cultural evolution, and the ontogenetic evolution of the individual, represent programmed approach to unspecified outcomes. Although the outcomes are unspecified, the criteria for such outcomes are not. Task oriented behaviors move toward new skills, new incentives, etc., referred to earlier as "growth." Non task behaviors respond to drive reduction; that is, to pressures from outside the organized

energy program, or imposed by competing energy programs. Both formal, artificial goals and unanticipated, emergent goals play a part in a utility concept. Major attention should focus on approach to goals that are unspecified in form but clearly specified by criteria. The task oriented individual is usually mistaken in regard to the goal he is moving toward, but he experiences intense esthetic delight when he arrives.

Hypotheses: The preliminary hypothesis suggests that: utility determines longevity and continued competence in old age. Social utility and personal utility raise the two questions: (1) who needs the old person? and (2) why does the individual need old age? Attention here has focused on the psychological question: why does the individual need old age?

If the older individual has a need for the years beyond 70, he will retain competence and live longer. This need for the later years is not a drive in the Hullian sense. That is, the individual is seen as an energy system that incorporates drive energy and puts drive to use. When this drive no longer has utility, the energy system loses force and disintegrates. The individual controls drive, and increases channeled drive. In clear contrast, the individual is controlled by Hull's drives, and reduces these latter drives.

Programmed energy utilization has been equated with Herzberg's task. Unprogrammed drive reduction has been equated with Herzberg's non-task behaviors. When the older individual pursues a "task," and uses drive in doing so, we can refer to the "meaningful use of time." In contrast, when the individual responds only in terms of reducing stresses and drives from surrounding conditions, he is avoiding forces that interfere with his meaningful use of time. Because of various connotations, the word "task" leads to misconceptions. The concept of

energy utilization serves better. Energy utilization is "meaningful" when it is programmed by the individual: when he is task oriented and engaged in "approach" behaviors. Avoidance behaviors are elicited by surrounding chaos, which works against any systematic continuity. In this sense, avoidance behaviors do not represent the meaningful use of time.

The general concept leads to an infinite number of hypotheses for specific research. The following selection is somewhat random and off-the-cuff.

Uncertainty: Herzberg associates task behaviors with verbally reported satisfaction. Why should task behaviors foster satisfaction? Three hypotheses follow:

1. An increase in the number of stimulus cues that trigger a common solution decreases uncertainty.

2. An increase in the number of possible solutions that might be appropriate for a given stimulus cue increases uncertainty.

3. In old age, loss of problem solving capacity is not sufficient to account for impaired performance. Rather, the problem-solving task changes. After age 70, the individual typically runs out of structured programs that provide a limited number of anticipated solutions (goals). He is no longer task oriented, and has no meaningful use for his time. Instead, he responds in terms of an infinite number of possible solutions to stresses from the unprogrammed environment.

These propositions incorporate the idea that task orientation fosters systematic continuity, in that it channels many cues for action toward a few anticipated outcomes, with a consequent reduction of "uncertainty." A non-task orientation reduces the number of cues that can be handled, and increases possible outcomes. A current experiment follows two previous studies (4, 8) and

manipulates the balance of cues and outcomes as an approach to analyzing schizophrenic "associative interference." The schizophrenic patient is seen as deficient in firm, meaningful programs. The older individual is seen as having run out of meaningful programs. He has no program, or need, for the years after 70: no firm, brief list of anticipated outcomes.

Reinforcement: Hypotheses more amenable to learning terminology require caution. More research needs to establish the distinction between stimuli as cues that channel the individual's self-directed utilization of energy; as opposed to stimuli that signal stresses or drives which need to be reduced. That is, too little is known about behavior-inherent incentives. These hypotheses are suggested:

1. A task orientation tends to establish an efficient reinforcement schedule, and one that is to some degree self regulating.

2. With a task orientation, reinforcement occurs in association with relevant behaviors. With a non-task orientation, reinforcement occurs in association with essentially random external events. The emphasis is on systematic relevance and continuity, not on response versus stimulus.

3. Task incentives increase in effectiveness, whereas non-task reinforcers lose potency. The suggestion is that task incentives change qualitatively: novelty and graduated complexity increase the effectiveness of reinforcers. Non-task reinforcers can increase only quantitatively. In old age, the individual responds with less intensity to food and pain. The effectiveness of task incentives could increase. In general, the idea is that infant behaviors are largely shaped by drive reduction. Old age behaviors are largely determined by energy utilization.

Old age: The six foregoing hypotheses refer to how the meaningful use of time increases efficiency. In regard to old age, the major thesis is that the individual typically lacks a program for the years beyond 70. Effective research might provide old age programs or roles, and demonstrate their effects. It is futile to debate the non-existence of an independent variable; in this case, the non-existence of programmed objectives for energy utilization in old age. Several more or less relevant hypotheses follow:

1. Major social planning directed to the "activation" and utilization of older individuals will bring about marked changes in longevity and continued competence. The research will be longitudinal and poorly controlled, paralleling the evidence on activation of mental patients. Because of the defects in longitudinal research, the changes will need to be strikingly obvious. The effects with mental patients are generally attributed to tranquilizers. Similarly, the effects with older subjects will be attributed to advances in nutrition and medical technology.

2. Subjects who utilize old age in judgment and integrative roles will retain competence better and live longer. For both situational and physiological reasons, age appropriate roles can be distinguished: infant behavior-shaping roles; young adult foothold-gaining roles; and older policy guidance roles.

3. Certain power-struggle and creative roles should foster longevity and continued competence. These two elements deserve specific mention. Competitive iconoclasm belongs to youth; but DeGaulle, Wellington, the Popes, Churchill, Adenauer, the Prussian General Staff, and Truman illustrate the role of old age in directing integrated power structures. Similarly, scientific creativity is currently credited exclusively to youth. The major "break-throughs" represent restructuring of highly complex overviews. It seems at least plausible that old

mentors perceive these break-throughs initially, and gladly turn over the arduous task of meticulous formulation to young virtuosos, who badly need the foothold-gaining credit.

4. Familiar solution models play a large part in old age roles. The issue relates to novelty and teaching the old new tricks. The older subject who uses energy meaningfully should have developed automatic controls to prevent the investment of energy in tasks such as learning nonsense syllables. On the other hand, an R. S. Woodworth in his later years could grasp new material and offer more original, less conservative approaches than any of his students. Attention might be directed to the hierarchical development of solution models, rather than to a broad overview of content.

5. The later the age of peak function, the longer the continuance of competence in old age. Lansing (3) summarizes a variety of physiological manipulations, including McKay's use of diet to prolong immaturity and increase longevity. The suggestion here, in relation to competence, would emphasize increased scope of life programs rather than arrest of development. The needs of advanced cultures for older individuals, the previously mentioned "social question" which has been tabled here, is related. That is, in cultures and social settings that utilize old age abilities, competence will continue to increase in the later years.

Specific deficits. Patterns of assets and liabilities change throughout the life span. In general, the hardware deteriorates in old age, whereas the information processing programs built into the hardware develop indefinitely. With reservations, old age implies loss in: speed, vigor or total energy supply, and resistance to disease. These are hardware losses, crucial for the caveman wrestling dinosaurs. The legendary overabundance provided by Nature could account

for basic hardware adequate to cover a life span of 169 to 208 years (cf. Malisoff's estimate quoted by Lansing, 3). Several hypotheses are relevant:

1. General resistance to disease and trauma from ages 70 to 100 compares favorably with neonate resistance. Technology has concentrated on infant mortality, since future adult contributions are seen as having utility.

2. Utility, rather than "natural death," determines senescence and longevity. Specific diseases need to be distinguished from a gene-determined biological clock that fixes the decline of an immunological system. To quote Lansing: "There is no known gene responsible for extension of life-span, while the genes which result in shortened life-span do so by regulating susceptibility to diseases. Senescence and the time of entrance into senility and natural death still resist genetic analysis (3)." In other words, all causes of death at any life age need not be encompassed by concepts of aging. On the other hand, programs extending the utility of energy over the later years should not be thought of as information processing magically independent of physiology. Programmed utility must involve motor patterns, diet, sleep routines, and a variety of other obviously physical factors.

3. Induced task behaviors will affect motivational orientation in old age, and these tasks must be tailored to the specific assets and deficits of older individuals. The relevant problems cannot be developed in detail here, but involve three main considerations: task appropriateness, task factors, and the development of specific aids. The role of speed and brief energy mobilization needs further research analysis. The older individual's response to achievement, responsibility, recognition, complexity, and induced effort needs consideration: the major requirement may be respecification of these terms, taken from mid-life industrial production, in light of the "meaningful use of time" in later years. And the correction of, or compensation for, specific accidental injuries and losses takes on increasing importance in old age.

References

1. Anker, J. M., & Walsh, R. P. Group psychotherapy, a special activity program, and group structure in the treatment of chronic schizophrenics. Journal of Consulting Psychology, 1961, 25, 476-481.

2. Aronson, E., & Mills, J. The effect of severity of initiation on liking for a group. Journal of Abnormal and Social Psychology, 1959, 59, 177-181.

3. Birren, J. E. (Ed.) Handbook of aging and the individual. Chicago: 1959. University of Chicago Press.

4. Blaufarb, H. A demonstration of verbal abstracting ability in chronic schizophrenics under enriched stimulus and instructional conditions. Journal of Consulting Psychology, 1962, 26, 471-475.

5. Festinger, L. Cognitive dissonance. Scientific American, 1962, 62, 93-102.

6. Festinger, L. The psychological effects of insufficient rewards. American Psychologist, 1961, 16, 1-11.

7. Ghiselin, B. The creative process and its relation to the identification of creative talent. Chap. 29 in: Taylor, C. W., & Barron, F. (Eds.) Scientific creativity. New York: 1963. John Wiley & Sons.

8. Hamlin, R. M., Haywood, H. C., & Folsom, Angela T. Effect of enriched input on schizophrenic abstraction. Journal of Abnormal Psychology, 1965, 70, 390-394.

9. Hamlin, R. M., & Nemo, R. S. Self-actualization of choice scores of improved schizophrenics. Journal of Clinical Psychology, 1962, 18, 51-54.

10. Herzberg, F., & Hamlin, R. M. A motivation-hygiene concept of mental health. Mental Hygiene, 1961, 45, 394-401.

11. Herzberg, F., & Hamlin, R. M. The motivation-hygiene concept and psychotherapy. Mental Hygiene, 1963, 47, 384-397.

12. Herzberg, F., Mausner, B., & Snyderman, Barbara B. The motivation to work. New York: 1959. John Wiley & Sons.

13. Kleemeier, R. W. (Ed.) Aging and leisure. New York: 1961. Oxford University Press.

14. McClelland, D. C. Toward a theory of motive acquisition. American Psychologist, 1965, 20, 321-333.

15. Willhelm, S. M. & Powell, E. H. Who needs the negro? Trans-action, 1964, 1, 3-6.